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CAMPBELL STEPHENSON ASCOLESE, LLP			LEE, BETTY E	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)
	10/626,792	CHERITON, DAVID R.
	Examiner	Art Unit
	Betty Lee	2616

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 24 July 2003.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-92 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-92 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 24 July 2003 is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO/SB/08)
 Paper No(s)/Mail Date _____
- 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. _____
- 5) Notice of Informal Patent Application
- 6) Other: _____

DETAILED ACTION

Specification

1. The disclosure is objected to because of the following informalities:

Claim 68 claims "a computer program product". However, "a computer program product" is not defined in the specifications.

Appropriate correction is required.

Claim Objections

2. Claims 81-92 are objected to because of the following informalities:

Claim 81 line 1 recites "an apparatus method". It is suggested that Applicant change "an apparatus method" to --- an apparatus ---.

Claims 82-92 are objected to as being dependent on an objected base claim.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-92 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 claims a network device comprising a duplicate packet map. However, claim 1 does not define the device.

Claim 36 recites the limitation "said duplicate packet" in lines 3. There is insufficient antecedent basis for this limitation in the claim. There is a similar problem with claims 55, 68, and 81.

Claim 39 line 2 recites "39 said PSV to said DPM". It is unclear what is being done to the PSV and the DPM.

Claim 68 claims a computer program product. Since there is no definition for a computer program product in the specifications, computer program product is given its normal meaning and interpreted as a software program. However, a software program can not contain computer readable media.

Claim 79 recites the limitation "said performing periodically" in line 2. There is insufficient antecedent basis for this limitation in the claim. There is a similar problem with claim 80.

Claim 81 is rejected as being a single means claim.

Claims 2-35, 37, 38, 40-54, 56-67, 69-78 and 82-92 are rejected as being dependent on a rejected base claim.

5. Claim 1 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite in that it fails to point out what is included or excluded by the claim language. This claim is an omnibus type claim.

Claim Rejections - 35 USC § 101

6. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 1, 2, and 68-80 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim 1 merely claims a map, which is a data structure. Data structures fall under non-statutory subject matter.

Claim 2 claims fields of a data structure.

Claim 68 claims a computer program product with a computer readable media. Since there is no definition for a computer program product in the specifications, computer program product is given its normal meaning and interpreted as a software program. However, a software program is non-statutory subject matter. Furthermore, claim 68 is non-statutory because media can be a pure signal according to page 22 of the specifications. A signal is also non-statutory subject matter. Claims 69-80 are also directed to non-statutory subject matter for the same reasons.

7. Note: To overcome the 101 rejections for claims 68-80, it is suggested that Applicant rewrite the claims in the form of a "computer readable medium embedded with instructions". Also, it is suggested that the term "carrier wave transmission media" is removed from the specifications.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. **Claims 1-3, 5-13, 15, 23, 27-31, 34-45, 55-59, 68-72, and 81-85** are rejected

under 35 U.S.C. 102(e) as being anticipated by Khansari et al. (US 6,446,131).

Regarding claim 1, Khansari teaches a duplicate packet map (see col. 7 lines 38-45).

Regarding claim 2, Khansari teaches a plurality of DPM fields (see col. 7 lines 46-56; There are multiple bytes in the index.).

Regarding claim 3, Khansari teaches the DPM is configured to receive a packet summary value (see col. 7 lines 38-45; FCS field of the frame corresponds to a PSV.).

Regarding claim 5, Khansari teaches a one of said DPM fields corresponds to the PSV (see col. 7 lines 38-45).

Regarding claim 6, each of the DPM fields corresponds to a bit in the PSV (see col. 7 lines 57-63).

Regarding claim 7, Khansari teaches each of the DPM fields is configured to compare a value of a corresponding bit of the PSV with a value stored in each of the

DPM fields to generate an output, and a value of each of the outputs indicates whether the value of the corresponding bit of the PSV matches the value stored in the each of the DPM fields (see col. 7 lines 50-56; The index generated from the FCS is compared to the index in the table. The matching index then indicates if the packet was previously received.).

Regarding claim 8, Khansari teaches each of the DPM fields is configured to be addressed using the PSV, and a value stored in a one of the DPM fields corresponding to a value of the PSV indicates whether the packet is the duplicate packet (see col. 7 lines 46-56).

Regarding claim 9, Khansari teaches a packet summary value generator, where the duplicate packet map is coupled to the PSV generator (see col. 7 lines 46-56).

Regarding claim 10, Khansari teaches the PSV generator is configured to generate a PSV based on a packet received by the PSV generator (see col. 7 lines 46-56), and the DPM is configured to receive the PSV (see col. 7 lines 46-50).

Regarding claim 11, Khansari teaches a plurality of DPM fields (see col. 7 lines 46-51; The index of the hash table has multiple bits.).

Regarding claim 12, Khansari teaches one the DPM fields corresponds to the PSV (see col. 7 lines 51-56; The index is matched to determine whether or not the packet has been previously received.).

Regarding claim 13, Khansari teaches each of the DPM fields corresponds to a bit in the PSV (see col. 7 lines 46-51).

Regarding claim 15, Khansari teaches the DPM bank comprises the DPM (see col. 7 lines 39-41).

Regarding claim 23, Khansari teaches a packet summary value generator, where the duplicate packet map is coupled to the PSV generator (see col. 7 lines 39-45).

Regarding claim 27, Khansari teaches the PSV generator is configured to generate a PSV based on a packet received by the PSV generator (see col. 7 lines 43-45), and the DPM is configured to receive the PSV (see col. 7 lines 50-51).

Regarding claim 28, Khansari teaches the DPM is further configured to indicate that the PSV matches a PSV stored in the DPM (see col. 7 lines 46-50).

Regarding claim 29, Khansari teaches the PSV is configured to generate the PSV using a cyclic redundancy check computation (see col. 7 lines 50-51).

Regarding claim 30, Khansari teaches a packet processing unit, the packet processing unit comprising the PSV generator (see col. 7 lines 39-45).

Regarding claim 31, Khansari teaches the DPM bank comprises the DPM (see col. 7 lines 43-45), the DPM bank is configured to generate a hit signal (see col. 7 lines 46-50), and the DPM bank is coupled to receive the PSV from the PSV generator (see col. 7 lines 50-55) and to provide the hit signal to the packet processing unit (see col. 7 lines 33-43).

Regarding claim 34, Khansari teaches the packet processing unit is configured to process the packet using the hit signal (see col. 7 lines 34-36).

Regarding claim 35, Khansari teaches the processing includes causing the packet processing unit to drop the packet based on the hit signal (see col. 7 lines 34-36).

Regarding claims 36, 55, 68, and 81, Khansari teaches determining if a field of a duplicate packet map indicates the packet is the duplicate packet (see col. 7 lines 46-50), wherein the determination is made using a packet summary value corresponding to the packet (see col. 7 lines 50-56).

Regarding claims 37, 56, 69, and 82, Khansari teaches indicating the packet is the duplicate packet, if the determination determines the packet is the duplicate packet (see col. 7 lines 46-50).

Regarding claim 38, Khansari teaches dropping the packet, if the packet is the duplicate packet (see col. 7 lines 34-36).

Regarding claims 39, 57, 70, and 83, Khansari teaches comparing the PSV to the DPM (see col. 7 lines 46-50).

Regarding claim 40, Khansari teaches the determination is made by comparing a bit of the PSV with a bit stored in the field of the DPM, and the indicating is performed if the bit of the PSV matches the bit stored in the field of the DPM (see col. 7 lines 50-56; The index generated from the FCS is compared to the index in the table. The matching index then indicates if the packet was previously received.).

Regarding claim 41, Khansari teaches setting the bit stored in the field of the DPM to a value of the bit of the PSV (see col. 7 lines 46-51).

Regarding claims 42, 58, 71, and 84, Khansari teaches selecting the field of the DPM based on the PSV (see col. 7 lines 50-56; The index of the hash table is selected by matching the index generated from the FCS field.).

Regarding claim 43, Khansari teaches the determination is made by selecting the field of the DPM based on a value of the PSV (see col. 7 lines 50-56; The value of the PSV is the index.) and the indicating is performed if a value stored in the field of the DPM indicates that the packet is the duplicate packet (see col. 7 lines 46-50).

Regarding claim 44, Khansari teaches setting the value stored in the field of the DPM, if the packet is not the duplicate packet (see col. 7 lines 50-56).

Regarding claims 45, 59, 72, and 85, Khansari teaches generating the PSV by generating a cyclic redundancy check value based on information in the packet (see col. 7 lines 50-56).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

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2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. **Claims 4 and 14** are rejected under 35 U.S.C. 103(a) as being unpatentable over Khansari et al. (US 6,446,131).

Regarding claims 4 and 14, Khansari teaches all the subject matter of the claimed invention with the exception of a Bloom filter. However, it is well known in the art to use a Bloom filter with a hash table. Thus, it would have been obvious to one of ordinary skill in the art to use a Bloom filter with the hash table as taught by Khansari. The motivation for doing so is to make the table more space efficient.

6. **Claims 16-22, 24-26, 32, 33, 46-54, 60-67, 73-80, and 86-92** are rejected under 35 U.S.C. 103(a) as being unpatentable over Khansari et al. (US 6,446,131) in view of Reiss (US 2004/0267945).

Regarding claim 16, 46, 60, 73, and 86, Khansari teaches all the subject matter of the claimed invention with the exception of a plurality of DPMs. However, Reiss teaches a plurality of DPMs (see paragraph 115 lines 1-5). Thus, it would have been obvious to one of ordinary skill in the art to use the system of Reiss in the system of Khansari. The motivation for doing so is to increase the capacity to store previously received packets.

Regarding claim 17, Khansari teaches all the subject matter of the claimed invention with the exception of a Bloom filter. However, it is well known in the art to use a Bloom filter with a hash table. Thus, it would have been obvious to one of ordinary

skill in the art to use a Bloom filter with the hash table as taught by Khansari. The motivation for doing so is to make the table more space efficient.

Regarding claim 18, 47, 61, 74, and 87, Khansari teaches all the subject matter of the claimed invention with the exception of a plurality of DPMs. Reiss teaches a plurality of DPMs (see paragraph 115 lines 1-5). It is well known in the art that the received packet can be compared with a current map. Thus, it would have been obvious to one of ordinary skill in the art to use a current map. The motivation for doing so is to make the system more efficient by focusing on the current map.

Regarding claim 19, Khansari teaches a DPM addressing unit coupled to said DPM (see col. 7 lines 50-56; The addressing unit provides the PSV to the table.) and a DPM control unit, coupled to control the DPM addressing unit and the DPM (see col. 7 lines 39-45; The control unit controls the duplicate packet detection/processing.). Khansari teaches all the subject matter of the claimed invention with the exception of multiple DPMs and a selection unit.

However, Reiss teaches multiple DPMs (see paragraph 115 lines 1-5) and a selection unit coupled to the DPMs (see paragraph 115 lines 1-5; The selection unit selects between the multiple DPMs/tables.). Thus, it would have been obvious to one of ordinary skill in the art to use the system of Reiss in the system of Khansari. The motivation for doing so is to increase the capacity to store previously received packets.

Regarding claim 20, Khansari teaches all the subject matter of the claimed invention with the exception of a plurality of DPMs. Reiss teaches a plurality of DPMs (see paragraph 115 lines 1-5). It is well known in the art that the received packet can

be compared with a current map. Thus, it would have been obvious to one of ordinary skill in the art to use a current map. The motivation for doing so is to make the system more efficient by focusing on the current map.

Regarding claim 21, Khansari teaches the control unit providing the PSV to the DPM (see col. 7 lines 50-56). Khansari teaches all the subject matter of the claimed invention with the exception of multiple DPMs.

However, Reiss teaches providing the PSV to a selected one of the multiple DPMs (see paragraph 122 1-5) and a current and previous DPM (see paragraph 115 lines 1-7; There is a current DPM/table and the other tables are the previous tables.). Thus, it would have been obvious to one of ordinary skill in the art to use the system of Reiss in the system of Khansari. The motivation for doing so is to increase the capacity to store previously received packets.

Regarding claim 22, Khansari teaches clearing an inactive portion of the DPM (see col. 8 lines 1-5). Khansari teaches all the subject matter of the claimed invention with the exception of multiple DPMs.

However, Reiss teaches multiple DPMs and clearing the older/inactive DPM (see 115 lines 1-7). Thus, it would have been obvious to one of ordinary skill in the art to use the system of Reiss in the system of Khansari. The motivation for doing so is to increase the capacity to store previously received packets.

Regarding claim 24, Khansari teaches a DPM addressing unit coupled between the PSV generator and the DPM (see col. 7 lines 50-56; The addressing unit provides

the PSV to the table.) Khansari teaches all the subject matter of the claimed invention with the exception of multiple DPMs and a selection unit.

However, Reiss teaches multiple DPMs (see paragraph 115 lines 1-5) and a selection unit coupled to the DPMs (see paragraph 115 lines 1-5; The selection unit selects between the multiple DPMs/tables.). Thus, it would have been obvious to one of ordinary skill in the art to use the system of Reiss in the system of Khansari. The motivation for doing so is to increase the capacity to store previously received packets.

Regarding claim 25, Khansari teaches and a DPM control unit, coupled to control the DPM addressing unit and the DPM (see col. 7 lines 39-45; The control unit controls the duplicate packet detection/processing.). Khansari teaches all the subject matter of the claimed invention with the exception of multiple DPMs and a selection unit.

However, Reiss teaches multiple DPMs (see paragraph 115 lines 1-5) and a selection unit coupled to the DPMs (see paragraph 115 lines 1-5; The selection unit selects between the multiple DPMs/tables.). Thus, it would have been obvious to one of ordinary skill in the art to use the system of Reiss in the system of Khansari. The motivation for doing so is to increase the capacity to store previously received packets.

Regarding claim 26, Khansari teaches the hit signal indicates that bit values of the PSV match bit values stored in corresponding locations in a DPM (see col. 7 lines 46-51). Khansari teaches all the subject matter of the claimed invention with the exception of a selection unit and multiple DPMs.

However, Reiss teaches multiple DPMs (see paragraph 115 lines 1-5) and a selection unit coupled to the DPMs (see paragraph 115 lines 1-5; The selection unit

selects between the multiple DPMs/tables.). Thus, it would have been obvious to one of ordinary skill in the art to use the system of Reiss in the system of Khansari. The motivation for doing so is to increase the capacity to store previously received packets.

Regarding claim 32, Khansari teaches the hit signal indicates that a value of the PSV matches a value stored in a DPM (see col. 7 lines 39-45). Khansari teaches all the subject matter of the claimed invention with the exception of multiple DPMs.

However, Reiss teaches a plurality of DPMs (see paragraph 115 lines 1-5). Thus, it would have been obvious to one of ordinary skill in the art to use the system of Reiss in the system of Khansari. The motivation for doing so is to increase the capacity to store previously received packets.

Regarding claim 33, Khansari teaches the hit signal indicates that bit values of the PSV match bit values stored in corresponding locations in a DPM (see 46-61). Khansari teaches all the subject matter of the claimed invention with the exception of multiple DPMs.

However, Reiss teaches a plurality of DPMs (see paragraph 115 lines 1-5). Thus, it would have been obvious to one of ordinary skill in the art to use the system of Reiss in the system of Khansari. The motivation for doing so is to increase the capacity to store previously received packets.

Regarding claim 48, 62, 75, and 88, Khansari teaches determining if a field of the DPM indicates the packet is the duplicate packet (see col. 7 lines 46-50, using the PSV (see col. 7 lines 50-56). Khansari teaches all the subject matter of the claimed invention with the exception of multiple DPMs.

However, Reiss teaches using multiple DPMs to determine if the packet is the duplicate packet (see paragraph 115 lines 1-5). Thus, it would have been obvious to one of ordinary skill in the art to use the system of Reiss in the system of Khansari. The motivation for doing so is to increase the capacity to store previously received packets to reduce the number of missed duplicate packets.

Regarding claim 49, 63, 76, and 89, Khansari teaches indicating the packet is not the duplicate packet, if the DPM indicates the packet is not the duplicate packet and indicating the packet is the duplicate packet, otherwise (see col. 7 lines 46-50). Khansari teaches all the subject matter of the claimed invention with the exception of multiple DPMs.

However, Reiss teaches using multiple DPMs to determine if the packet is the duplicate packet (see paragraph 115 lines 1-5). Thus, it would have been obvious to one of ordinary skill in the art to use the system of Reiss in the system of Khansari. The motivation for doing so is to increase the capacity to store previously received packets to reduce the number of missed duplicate packets.

Regarding claim 50, 64, 77, and 90, Khansari teaches designating a portion of the table as inactive or previous and using a portion as the current DPM (see col. 8 lines 1-5). Khansari teaches all the subject matter of the claimed invention with the exception of multiple DPMs.

However, Reiss teaches using multiple DPMs and designating a current DPM as well as inactive and previous DPMs (see paragraph 115 lines 1-7). Thus, it would have been obvious to one of ordinary skill in the art to use the system of Reiss in the system

of Khansari. The motivation for doing so is to increase the capacity to store previously received packets.

Regarding claim 51, Khansari teaches clearing the inactive portion of the DPM prior to using it as the current DPM (see col. 8 lines 1-5). Khansari teaches all the subject matter of the claimed invention with the exception of multiple DPMs.

However, Reiss teaches using multiple DPMs and designating a current DPM as well as inactive and previous DPMs (see paragraph 115 lines 1-7) and clearing the inactive DPM. Thus, it would have been obvious to one of ordinary skill in the art to use the system of Reiss in the system of Khansari. The motivation for doing so is to increase the capacity to store previously received packets.

Regarding claim 52, 54, 65, 67, 78, 80, 91, and 92, Khansari teaches the act of periodically reducing the DPM by selecting the inactive and active portions of the DPM (see col. 8 lines 1-5). Khansari teaches all the subject matter of the claimed invention with the exception of multiple DPMs.

However, Reiss teaches using multiple DPMs and designating a current DPM as well as inactive and previous DPMs (see paragraph 115 lines 1-7) and clearing the inactive DPM. Thus, it would have been obvious to one of ordinary skill in the art to use the system of Reiss in the system of Khansari. The motivation for doing so is to increase the capacity to store previously received packets.

Regarding claim 53, 66, and 79, Khansari teaches a period of the performing periodically is such that the period is greater than an expected differential between

duplicate packet arrivals and the period is less than a time between packet retransmissions (see col. 8 lines 6-14).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sakurai (US 6,810,021) are all cited to show systems which are considered pertinent to the claimed invention.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Betty Lee whose telephone number is (571) 270-1412. The examiner can normally be reached on Monday-Thursday 9-5 EST and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hassan Kizou can be reached on (571) 272-3088. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BL



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